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Sun visor for the interior of a motor vehicle**Description**

- 5 The invention relates to a sun visor which can be opened out in the interior of a motor vehicle from a non-used position into anti-glare positions and can be pivoted from a first, essentially frontal anti-glare position into a second, essentially lateral anti-glare  
10 position.

**Prior art**

- Patent specification DE 38 29 976 C1 discloses a sun  
15 visor of the generic type. It comprises a sun visor body which can be opened out both downward from a horizontal non-used position and from an anti-glare position in front of the windshield to in front of the side window of the vehicle by means of an L-shaped  
20 bearing bracket mounted rotatably in a pillow block, on the one hand, and in the sun visor body, on the other hand. In this case, that flat side of the sun visor body which faces outward in the first frontal anti-glare position faces the vehicle interior in the  
25 second, lateral anti-glare position.

- This generally customary design is disadvantageous insofar as fittings, for example mirrors, retaining devices for parking tickets or the like, which are  
30 provided on a flat side of the sun visor body are accessible to the occupants only in one anti-glare position, usually the frontal one.

**Object**

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The invention is based on the object of providing a sun visor which avoids the abovementioned disadvantages of the prior art..

**Achievement**

The object is achieved according to the invention by  
5 the fact that, in the case of a sun visor according to  
the precharacterizing clause of claim 1, the sun visor  
body is guided by means of a guide device in such a  
manner that, in each anti-glare position, the same flat  
side of the sun visor body faces the vehicle interior.

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According to a first preferred embodiment of the  
invention, the sun visor body is guided pivotably from  
the first into the second anti-glare position, on the  
one hand, via a rail guide, which is arranged on the  
15 roof lining of the vehicle and, on the other hand, via  
an articulated arm which is arranged rotatably both on  
the roof lining and on the sun visor body. In this  
case, the articulated arm advantageously comprises two  
bent half arms which, when the sun visor is opened out  
20 from the non-used position into an anti-glare position,  
can be rotated in relation to each other about an  
essentially horizontal axis. In order to produce a  
joint, the half arms can have two limbs which can be  
inserted rotatably one inside the other. Preferably,  
25 the first half arm for pivoting the sun visor from the  
first into the second anti-glare position is mounted  
rotatably about a first essentially vertical axis in  
the roof lining, and the second half arm is mounted  
rotatably about a second, vertical axis, which is  
30 offset parallel to the first axis, in the sun visor  
body.

In order to retain the sun visor body in the frontal  
anti-glare position, which experience has shown to be  
35 more frequently used, the articulated arm can be  
designed in a manner such that it can be latched  
releasably by means of a latching device to the sun  
visor body situated in the first, frontal anti-glare

position.

The rail guide advantageously has a guide rail, which is fastened to the roof lining and is arranged horizontally essentially transversely with respect to the direction of travel, and a slider which is fastened to the sun visor body. The slider may be provided with a bent arm piece which, when the sun visor is pivoted from the first into the second anti-glare position, can be rotated about an axis which is essentially vertical with respect to the guide rail. The sun visor body can preferably be opened out from the non-used position into an anti-glare position about an essentially horizontal limb of the arm piece. In this case, the arm piece and the articulated arm are advantageously in operative connection in such a manner that the sun visor body can only be opened out from the non-used position into an anti-glare position if the horizontal limbs of the articulated arm, on the one hand, and the horizontal limb of the arm piece, on the other hand, are aligned with one another.

By means of a locking device acting in the region of the horizontal limb of the arm piece, the sun visor body can be retained releasably in particular in its generally approximately horizontal non-used position.

According to another advantageous refinement of the invention, the sun visor body is guided pivotably from the first into the second anti-glare position via a pair of articulated arms forming a four bar linkage, with axes of articulation which are essentially vertical with respect to the roof lining. The pair of articulated arms can be mounted on the sun visor in an articulated block, in which the sun visor, for its part, is arranged in a manner such that it can be opened out about an essentially horizontal axis of articulation to pivot it from the non-used position

- 4 -

into an anti-glare position, preferably with the use of a locking device which acts in the region of the horizontal axis and releasably retains the sun visor body in particular in the non-used position.

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The articulated arms of the four bar linkage are advantageously in contact in the first and/or second anti-glare position so as to form an end stop, it being possible between the articulated arms to provide a 10 latching device which acts in the region of this end stop and retains the sun visor body in the desired anti-glare position. As an alternative, at least one joint of the four bar linkage can be designed such that it can be overstretched in the manner of a toggle 15 lever, overcoming a dead-center position, in order to lock the sun visor body in the first and/or second anti-glare position.

### **Figures**

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The figures illustrate schematically different embodiments of the invention by way of example.

In the figures:

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Fig. 1 shows a sun visor according to a first embodiment of the invention for the left vehicle occupant in a frontal anti-glare position from the vehicle occupant view

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Fig. 2 shows the sun visor according to Fig. 1 in a top view in various anti-glare positions

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Fig. 3 shows an enlarged detail from Fig. 1 together with an illustration of the latching device from claim 6

Fig. 4 shows an enlarged detail from Fig. 1 with an

- 5 -

illustration of the locking device from  
claim 11

5 Fig. 5 shows a further sun visor according to the  
invention in a frontal anti-glare position from  
the vehicle occupant's view

Fig. 6 shows the sun visor from Fig. 5 in top view in  
various anti-glare positions

10 Fig. 7 shows an enlarged detail from Fig. 1 together  
with an illustration of the locking device from  
claim 14

15 Fig. 8 shows a schematic diagram of the design of the  
four-bar linkage from claim 17.

The sun visor 1 which is illustrated in Fig. 1  
comprises a sun visor body 2 which is connected to the  
20 roof lining 4 of a motor vehicle via a guide device 3.

The guide device 3 firstly comprises, as is also  
apparent from Fig. 2, a rail guide 5 with a guide rail  
5a which is arranged in a fixed position on the roof  
25 lining 4 and extends horizontally and transversely with  
respect to the direction of travel (Y-axis of the  
vehicle). A slider 6 is inserted into the guide rail 5a  
in a longitudinally displaceable manner and, for its  
part, accommodates a bent arm piece 7. The arm piece 7  
30 can be rotated with its first limb 8 about a vertical  
axis 9 in the slider 6 and with its second limb 10  
about a horizontal axis 11 in the sun visor body 2.

The guide device 3 furthermore comprises an articulated  
35 arm 12 which is composed from two bent half arms 13,  
14. The first half arm 13 is mounted with one limb 15  
in a rotatable manner about a vertical axis of rotation  
16 in a small pillow block 17, which is fastened to the

- 6 -

roof lining 4 in the vicinity of the side window of the vehicle, while the second half arm 14 engages with a limb 18 in a rotatable manner about a vertical axis of rotation 19 approximately centrally in the upper edge 5 of the sun visor body 2. The two half arms 13, 14 are furthermore connected to each other rotatably about a horizontal axis of rotation 22 by means of their remaining limbs 20, 21, which can be inserted one inside the other. On its upper edge, the sun visor body 10 2 has a recess 23 which provides the space necessary for receiving the articulated arm 12.

If the horizontal axes of rotation 11 and 22 of the arm piece 7 and of the articulated arm 12 are aligned with 15 each other, the sun visor body can be opened out downward in front of the windshield from an approximately horizontal non-used position, in which it rests, if appropriate, against the roof lining 4, into the frontal anti-glare position (position A). In the 20 process, the half arms 13, 14 rotate in relation to each other about the horizontal axis of rotation 22 and the arm piece 7 rotates about the axis of rotation 11 which is horizontal with respect to the sun visor body 2.

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As is apparent in Fig. 2, the sun visor body can be pivoted from this position via any desired intermediate positions (for example position C) into a lateral anti-glare position (position B), in which the side window 30 of the vehicle is covered in some regions. In this case, the articulated arm 12 rotates in small pillow blocks 17 and the sun visor body 2 rotates about the vertical axes of rotation 16 and 19. At the same time, the slider 6 is displaced horizontally and transversely 35 with respect to the direction of travel outward toward the side window in the guide rail 5a, the arm piece 7 rotating in the slider 6 about the vertical axis of rotation 9. The pivoting-back into the frontal anti-

glare position takes place with a reverse sequence of movement.

An unintentional pivoting of the sun visor body into  
5 the lateral anti-glare position can be avoided by means  
of the latching device 24, which is illustrated on an  
enlarged scale in Fig. 3. For this purpose, a  
projection 25 protruding outward horizontally from the  
half arm 13 latches in the lateral region of the recess  
10 23 of the sun visor body 2. Pressing of a button 26  
embedded next to it in the sun visor body 2 enables the  
latching connection to be released and the sun visor  
body 2 to be pivoted without reaching over into the  
lateral anti-glare position. Furthermore, as is  
15 apparent from Fig. 4, a locking device 27 is provided  
in the sun visor body 2, said locking device having a  
leaf spring 29 which acts on a flattened section 28 of  
the limb 10 of the arm piece 7 and by means of which  
the sun visor body 2 is retained releasably in the non-  
20 used position.

In the embodiment illustrated in Figs 5 and 6, the  
guide device 3 for the sun visor body 2 is designed as  
a four bar linkage, a doubly bent pair of articulated  
25 arms 30, 31 being mounted at a distance from each other  
at one end in the small pillow block 17 and at their  
other end in an articulated block 32 in a manner such  
that they can rotate about vertical axes of rotation 33  
to 36. While the small pillow block 17 is connected in  
30 a fixed position to the roof lining 4, the articulated  
block 32 additionally accommodates a spindle piece 37  
which is embedded into the sun visor body 2 and about  
which the latter can be opened out from any desired  
non-used position into an anti-glare position. A  
35 locking device 27, which acts analogously to the  
previously described device, in the articulated block  
32 retains the sun visor body 2 in the non-used  
position (Fig. 7).

The sun visor body 2 is retained in the frontal anti-glare position (position A) by the fact that the four bar linkage is overstretched in the manner of a toggle lever beyond a dead-center position 38 into the position illustrated in Fig. 8, with the articulated arms 30, 31 being briefly elastically deformed. In the end position, a virtual straight line X, which connects the axes of rotation 35, 36 in the articulated block 32, is no longer aligned with the rear axis of rotation 34, but encloses an obtuse angle  $\alpha$  together with the associated articulated arm 31. In this case, the bent region of the rear articulated arm 31, which region forms the axis of rotation 36, bears laterally against the other articulated arm 30 and therefore serves as an end stop for the four bar linkage. Of course, in addition or as an alternative to the toggle lever design, a releasable latching device 39 acting between the articulated arms 30, 31 can be provided there.

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The sun visor body 2 may expediently also be retained in the lateral anti-glare position.

**Reference numbers**

- 1 Sun visor
- 2 Sun visor body
- 5 3 Guide device
- 4 Roof lining
- 5 Rail guide
- 5a Guide rail
- 6 Slider
- 10 7 Arm piece
- 8 Limb (of the arm piece 7, vertical)
- 9 Axis of rotation (vertical)
- 10 Limb (of the arm piece 7, horizontal)
- 11 Axis of rotation (horizontal)
- 15 12 Articulated arm
- 13, 14 Half arm
- 15 Limb (of the half arm 13, vertical)
- 16 Axis of rotation (vertical)
- 17 Small pillow block
- 20 18 Limb (of the half arm 14, vertical)
- 19 Axis of rotation (vertical)
- 20, 21 Limb (of the half arms 13, 14, horizontal)
- 22 Axis of rotation (horizontal)
- 23 Recess
- 25 24 Latching device
- 25 Projection
- 26 Button
- 27 Locking device
- 28 Flattened section
- 30 29 Leaf spring
- 30, 31 Articulated arm
- 32 Articulated block
- 33 to 36 Axes of rotation (of the articulated arms, vertical)
- 35 37 Spindle piece
- 38 Dead-center position
- 39 Latching device